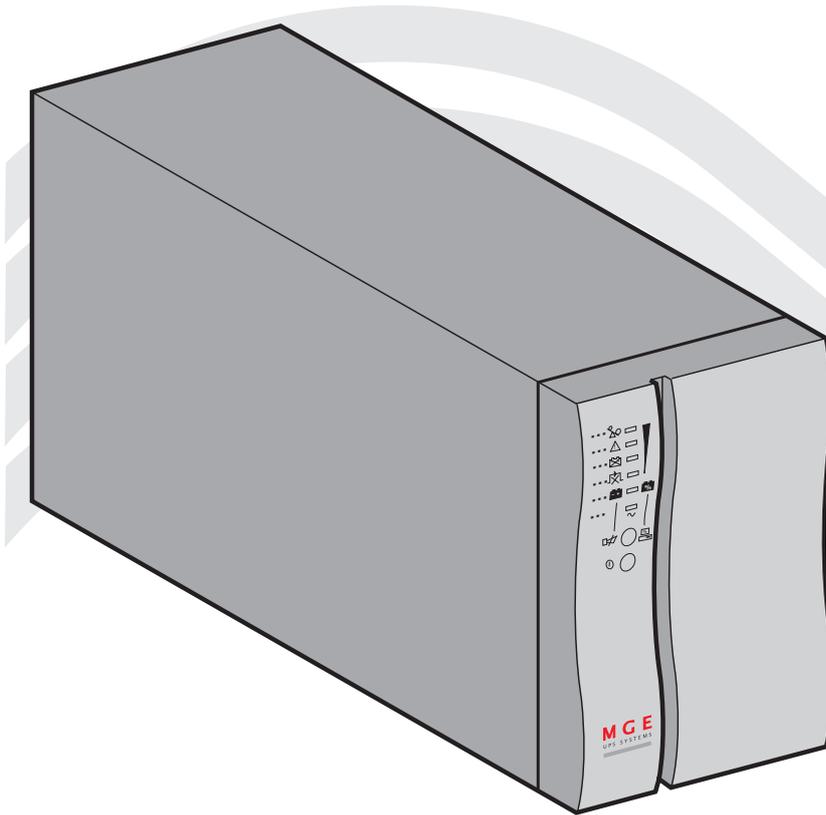# Pulsar™
EX7 / EX10 / EX15
EXB10 / EXB15

Manuel d'utilisation

User Manual

Manual de instrucciones

M G E
UPS SYSTEMS

Thank you for purchasing the **EX** Uninterruptible Power Supply.
The **EX** has been designed to provide many years of trouble-free operation. Please review the manual which has been prepared to provide you with all the necessary information concerning the installation and use of your **EX**.

For service call 1-800-523-0142.

Sincerely,

MGE UPS SYSTEMS

Nous vous remercions pour l'achat de l'Alimentation sans interruption **EX**. Nous vous invitons à lire ce manuel en souhaitant qu'il apporte tous les éléments nécessaires à l'installation et à l'utilisation de votre onduleur **EX.**

Appelez le numéro de téléphone 714-513-7349.

Nous vous prions d'agréer, Madame, Monsieur, nos sentiments les meilleurs.

MGE UPS SYSTEMS

Le agradecemos la compra del ondulador **EX**.
Lo invitamos a leer este manual esperando que éste le brindará todos los elementos necesarios para la instalación y la utilización de su ondulador **EX.**

Contáctenos al siguiente número de teléfono 714-513-7349.

Le saludamos a Ud. muy cordialmente.

MGE UPS SYSTEMS

Federal Communications Commission (FCC) Statement

Note: this equipment has been tested and found to comply with Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when equipment is operated in a residential environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits.

note

■ this equipment has been tested and found to comply with Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

service and factory repair - call 1 - 800 - 523 - 0142

■ direct questions about the operation, repair, or servicing of this equipment to MGE UPS SYSTEMS, Inc. Customer Support Services. Include the part number, assembly number, and serial number of the unit in any correspondence. Should you require factory service for your equipment, contact MGE UPS SYSTEMS, Inc. Customer Support Services and obtain a Return Materials Authorization (RMA) prior to shipping your unit. Never ship equipment to MGE UPS SYSTEMS, Inc. without first obtaining an RMA.

proprietary rights statement

■ the information in this manual is the property of MGE UPS SYSTEMS, Inc., and represents a proprietary article in which MGE UPS SYSTEMS, Inc., retains any and all patent rights, including exclusive rights of use and/or manufacture and/or sale. Possession of this information does not convey any permission to reproduce, print, or manufacture the article or articles shown herein. Such permission may be granted only by specific written authorization, signed by an officer of MGE UPS SYSTEMS, Inc.;
■ IBM, PC-AT, ES/9000, and AS/400 are trademarks of International Business Machines Corporation. Other trademarks that may be used herein are owned by their respective companies and are referred to in an editorial fashion only.

two years warranty policy

■ MGE UPS SYSTEMS, Inc. (herein after referred to as MGE) warrants **Topaz** and **Pulsar** equipment manufactured by MGE to be free from defects in materials and workmanship for a period of two years from date of purchase. If within such period purchaser discovers defective item and promptly notifies MGE in writing, MGE shall repair or replace the item at the Company's option. This warranty shall not apply:
□ to equipment not manufactured by MGE,
□ to equipment repaired or altered by others than MGE,
□ to equipment subjected to negligence, accident, or damage by circumstances beyond MGE's control, or to improper operations, maintenance, or storage, or to other than normal use or service.
With respect to equipment not manufactured by MGE, the Warranty obligations of MGE shall in all respects conform and Warranties do not cover reimbursement for labor, transportation, removal, installation, or other expenses which may be incurred in connection with repairs or replacement. Except as may be expressly provided in an authorized writing by MGE, MGE shall not be subject to any other obligations or liabilities whatsoever with respect to equipment manufactured by MGE or service rendered by MGE. After Sales Service Support Line: 1-800-523-0142.

ENGLISH

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

This manual contains important instructions for Models EX7/EX10/EX15/EXB10/EXB15 that should be followed during installation and maintenance of the UPS batteries.

■ This equipment can be operated by any individual, with no previous training;

■ **CAUTION:** Risk of electric shock, even with unit disconnected from AC power source. Hazardous voltage still may be present through operation from battery. The battery supply should be disconnected at the plus and minus terminals using the quick disconnect connectors of the battery when maintenance or service work inside the UPS is necessary.

■ **The UPS contains voltages which are potentially hazardous. All repairs should be performed by qualified service personnel only;**

■ **do not attempt to power the UPS from any receptacle other than a 2-pole 3-wire grounded receptacle;**

■ do not place **Pulsar** near water or in environment of excessive humidity;

■ do not allow liquids or any foreign objects to get inside **Pulsar**;

■ do not block air vents in the back of **Pulsar**;

■ do not plug household appliances such as hair dryers to **Pulsar** receptacles;

■ do not place **Pulsar in** direct sunlight or close to heat-emitting source;

■ the AC power receptacle should be near the equipment and easily accessible. To isolate **Pulsar** from AC input, remove the input power cord from the AC power receptacle;

■ if **Pulsar** is to be stored for a long time, it is recommended to recharge the batteries (by connecting AC power source to **Pulsar**, switch "ON" or "OFF"), once a month for 24 hours to avoid a full batteries discharge;

■ **Pulsar** contains batteries that should be disposed of or recycled in accordance with local applicable laws;

■ prior to installation, store **Pulsar** in a dry location;

■ storage temperatures must be between –4°F (-20°C) and +113°F (+45°C);

■ servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries;

■ when replacing the batteries, use the same number and the following type of batteries:

□ **Pulsar EX7**: 2 x 12V - 7.2Ah,

□ **Pulsar EX10** : 3 x 12V - 7.2Ah,

□ **Pulsar EX15** : 4 x 12V - 7.2Ah;

■ ~ : alternating current supply symbol;

■ **CAUTION:** do not dispose of battery or batteries in a fire. The battery may explode;

■ **CAUTION:** do not open or mutilate the battery or batteries, released electrolyte is harmful to the skin and eyes. It may be toxic;

■ **CAUTION:** a battery can present a risk of electric shock and high short circuit current. The following precautions should be observed when working with batteries:

□ remove watches, rings or other metal objects,

□ use tools with insulated handles,

□ wear rubber gloves, boots and safety glasses;

■ please dispose of the packaging in accordance with the applicable legislation.

ENGLISH
introduction

In critical situations, count on MGE UPS SYSTEMS **Pulsar EX7, EX10** and **EX15** uninterruptible power supplies (UPS). Their protection keeps your data intact and accessible.

Pulsar EX7, EX10 and **EX15** UPSs ensure top quality power around the clock, and continue operations during power failures. An intelligent microprocessor detects any operating anomalies of the UPS and triggers an alarm if corrective action is necessary. In addition to the high-technology aspect of these UPSs, you can count on backup from our staff, a team of specialists, around the corner from you, throughout the world. It's no accident that MGE UPS SYSTEMS is the world leader in UPS protection.

application of Pulsar EX7, EX10 and EX15:

Network servers and interconnection devices are very sensitive to electrical disturbances of all types, including outages, voltage sags, brownouts, spikes, etc. The origins of the disturbances also vary, ranging from atmospheric phenomena, to nearby devices generating interference such as elevators, photocopy machines and machine tools, not to mention human errors, like the accidental pulling out of power cords or tripping of circuit breakers. The consequences of these disturbances on computer systems range from data losses to hardware damage (power supplies, hard disks).

Pulsar EX7, EX10 and **EX15** are specially designed to protect network servers and all other interconnection devices that are sensitive to electrical disturbances.

Pulsar EX7, EX10 and **EX15** add fault-tolerance to the utility supplying your sensitive equipment.

Pulsar EX7, EX10 and **EX15** are designed as compact units and feature very silent operation. They can be installed under a desk, and can also be installed in a rack (see "options").

Pulsar EX7, EX10 and **EX15** provide a stable supply of clean power, long back-up time during a utility outage (see table) and vast information and control possibilities according to the configuration selected.

Pulsar EX7, EX10 and **EX15** On-Line technology provides maximum protection and availability of your workstations, server, and network communication devices.

Pulsar EX7, EX10 and **EX15** offer many functions and characteristics designed to simplify power management:

■ automatic battery test carried out periodically. In the event of a fault, a LED provides advance warning for battery replacement;

■ front panel LEDs signal all types of faults and alarms;

■ Bar graph continuously indicates the battery charge level or the critical load power level;

■ **Pulsar EX7, EX10** and **EX15** are environment friendly: all components are recyclable and an electronic power-saver device reduces power consumption if the UPS is not active for a period exceeding 5 minutes while on battery back-up;

■ EX Driver software provides rapid startup of **Pulsar EX7, EX10** and **EX15** using the EX Tuner configuration module. This module adapts **Pulsar EX7, EX10** and **EX15** to user preferences (battery test frequency, startup and shutdown sequences, setting of battery thresholds, etc.). Operation and monitoring are ensured by the UPS Manager 3.1 module operating under Windows 3.1.

EX Driver connects to the RS 232 port on the **Pulsar EX7, EX10** and **EX15** (see "communication" section for further details);

■ Solution-Pac™ is a CD-ROM which contains all the tools needed to supervise your UPS.

options

■ **rack installation kit:** this kit is used to install **Pulsar EX7, EX10** and **EX15** in a 19-inch rack. The kit is designed to receive **two Pulsar EX7, EX10** and **EX15**, or **one Pulsar EX10/EX15 and a battery extension unit**, thus offering up to 3000 VA of power;

■ **UM Sensor environment measurement unit:** compatible with SNMP and UPS Manager 2 Unix and OS/2, or Solution Pac™, this unit measures the temperature and the relative humidity in the room where the **Pulsar** is installed. Eight relay contacts are provided to transmit signals to an administration platform, in the form of voltage free contacts to enable monitoring of (fire alarm, climate control fault, intrusion, etc.);

■ **battery extension module: Pulsar EXB10/EXB15** battery extension modules lengthen the battery time of the **Pulsar EX10/EX15** to meet your requirements.

additional communications options:

■ **communication cables:** these cables are used for the file-closing utilities offered by a number of network operating systems. They are available for Novell NetWare, Microsoft Lan Manager and Windows NT, IBM Lan Server, Artisoft LANtastic, Banyan Vines, Apple System 7, IBM AS400 and many others;

■ **UPS Manager 2 communication software:** this software can be used for automatic file closing on one or more servers, as well as for remote UPS shutdown and interrogation of all **Pulsar EX7, EX10** and **EX15** operating parameters. It is available for Novell NetWare, Microsoft Lan Manager, IBM Lan Server, the main Unix systems on the market (SCO, AIX, HP/UX, OSF 1, etc.) VAX UMS and many others;

■ **SNMP administration:** MGE UPS SYSTEMS has the most complete offering for the administration of a group of UPSs using the SNMP protocol with different network-connection modules (UM Link adaptor or proxy UM Agent software), supervision modules (dedicated software under Windows UM View or application for NMS platforms such as HP OpenView or Novell NMS) and a file-closing module (UM Client). The MGE UPS SYSTEMS offering complies with RFC 1628 specifications (IETF) and was certified by the InterWorking Labs during the Test Summit in June 1994;

■ **SNMP card:** this card, inserted into your unit, makes your UPS SNMP-compatible in any environment;

■ **status information card:** this option provides you with 5 voltage free contacts: on battery, on by-pass, low battery, load on UPS.

Contact your dealer for further information on these options.

software supplied with Pulsar EX7, EX10 and EX15

To meet the different operating environments of your UPS, **Pulsar EX** includes 2 MGE UPS SYSTEMS software programs:

■ **EX-Driver** software for Windows (on 3.5" diskettes);

■ **Solution-Pac™** network software (on CD-ROM).

EX-Driver for Windows

EX Driver for Windows provides communication with the UPS from a simple Windows workstation. EX-Driver is compatible with Windows 3.1x and Windows 95, for communication with the UPS via a serial connection for various needs:

■ **personalization of the UPS operating mode:** the EX-Tuner utility, can be used to change certain UPS operating parameters if the standard factory settings are not ideal for the operating conditions.

It is possible to modify the output voltage, battery-test frequency, startup and shutdown sequences, operation of automatic by-pass, etc.;

■ **UPS monitoring from a Windows workstation and system safety:**

EX-Driver, UPS Manager 3 software, can display the UPS status, warn the user if a problem arises, and provide automatic shutdown.

The many possibilities available include:

□ supervision of operating parameters through a graphic interface (display of battery charge level, remaining battery time and UPS load level). These values can be recorded periodically in a log file,

□ messages to the user in case of power outage or UPS problem and recording of events in a log file,

□ during long-term power outages, automatic shutdown of the system and of the UPS, followed by automatic restart of the UPS (system reboot) on return of utility power,

□ PowerShare™ functions.

Solution-Pac™ for networks and multi-station systems

Novell Netware, Windows NT, OS/2 Lan Server, SCO Unix, etc.)

Protection by UPS is only complete and effective if combined with powerful software functions which warn users and the operator of any power supply problem, automate system shutdown, supervise and remotely control the UPSs. MGE UPS SYSTEMS created Solution-Pac™ for this purpose.

Solution-Pac™ combines all these functions in a single CD-ROM, usable in local or remote mode (SNMP), and covering the main network environments.

Solution-Pac™ is the ideal solution for protecting networks and multistation systems.

Solution-Pac™ on a single CD-ROM contains everything needed to safeguard one or more systems and to supervise one or more UPSs from a local or remote station.

Solution-Pac™ includes SNMP UM-Agent, UM-Client system shutdown software, and UM-Console supervision software.

Solution-Pac™ is a powerful and upgradable software tool which provides all the supervision, control and safety functions associated with a UPS:

□ graphic display of the UPS,

□ remote control of the UPS and output receptacles,

□ user alarm of problems,

□ recording of events in log files,

□ automatic system shutdown and restart,

□ local or remote supervision of UPSs and ancillary devices,

□ transmission of UPS information and alarms to any SNMP supervisor.

general contents / sommaire général / sumario general

Pulsar EX7/EX10/EX15/EXB10/EXB15 presentation

présentation de Pulsar EX7/EX10/EX15/EXB10/EXB15
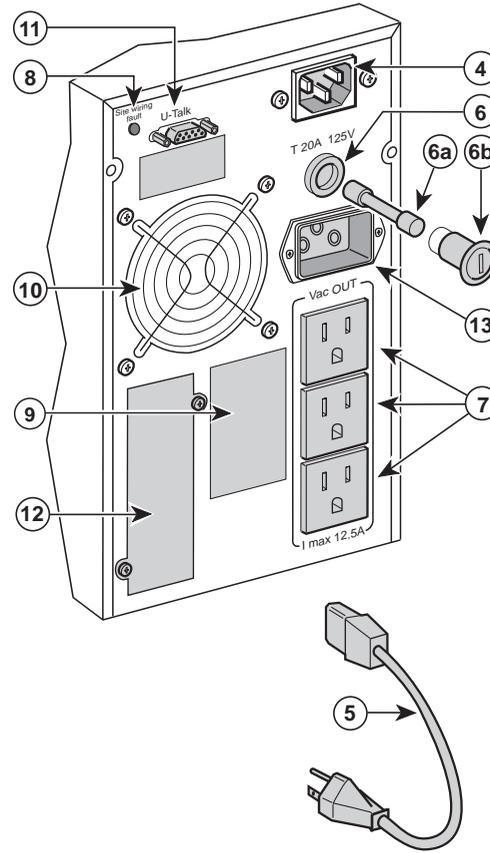
presentación de Pulsar EX7/EX10/EX15/EXB10/EXB15

Pulsar EX7/EX10/EX15
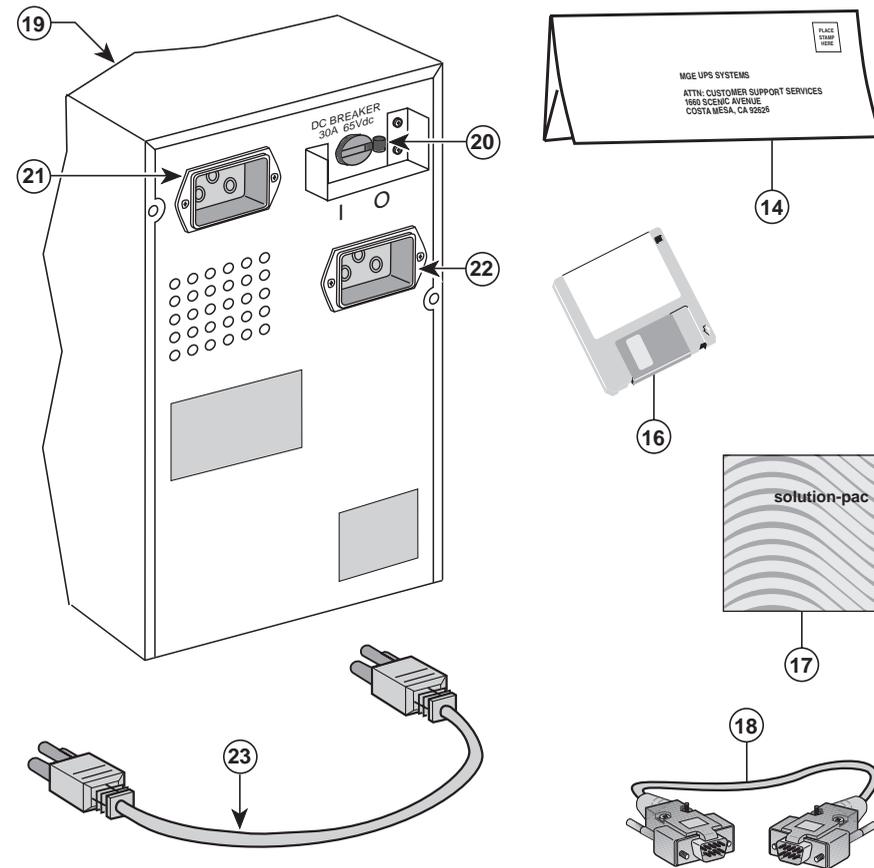**front view / vue avant / vista delantera**
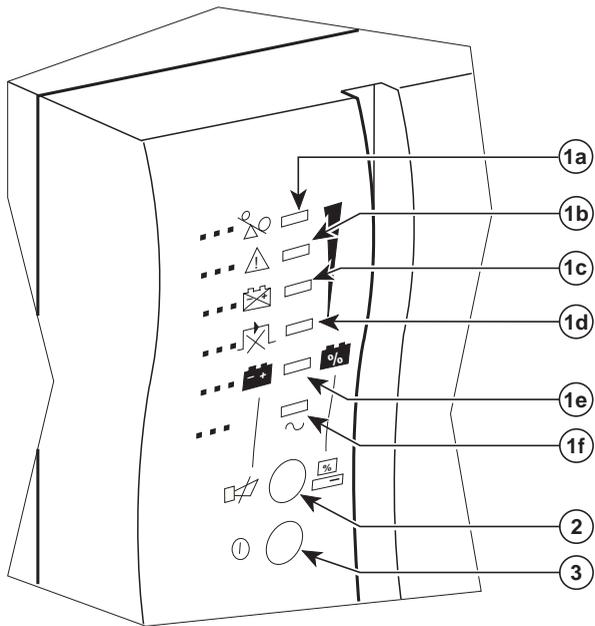
Pulsar EX7/EX10
rear view / vue arrière / vista trasera
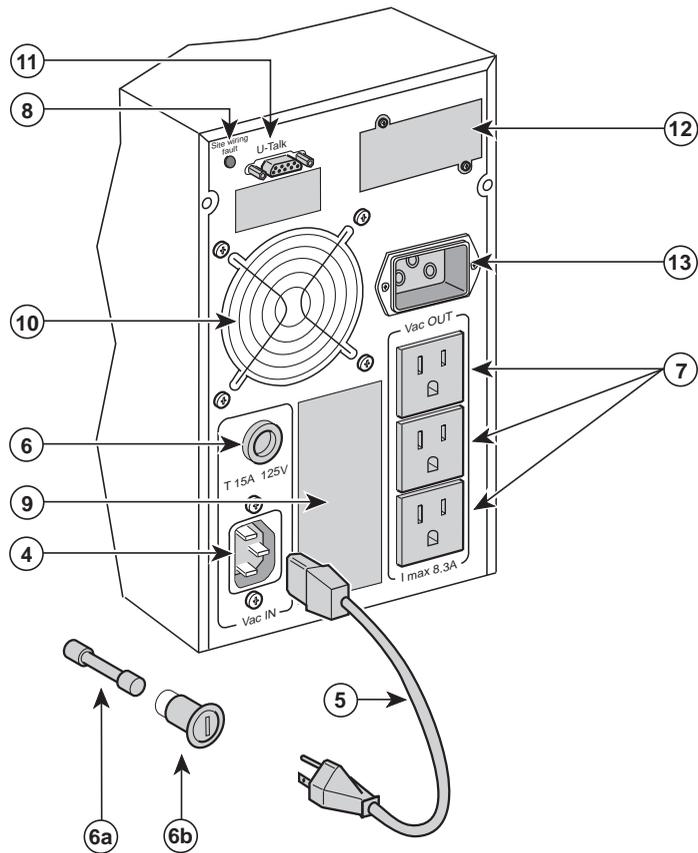
Pulsar EX15
rear view / vue arrière / vista trasera

Pulsar EXB10/EXB15
rear view / vue arrière / vista trasera

contents

getting started

location
■ observe the safety rules indicated at the beginning of this document.

preliminary checks
■ check that the "on/off" button " ⏻ " on the front is not pushed in;
■ check that rating shown on the rating label corresponds to the input voltage specification and power requirement of the load.
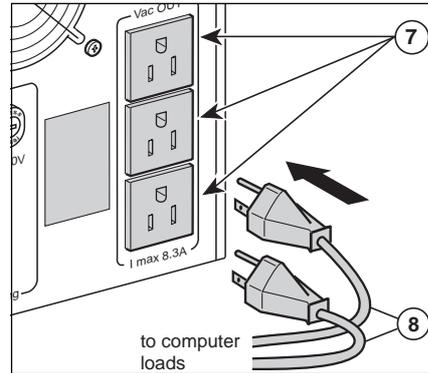
connections
■ **use the AC input cord to supply input power to Pulsar as shown.**
Connect the AC input cord between UPS utility power input receptacle, and utility power outlet.
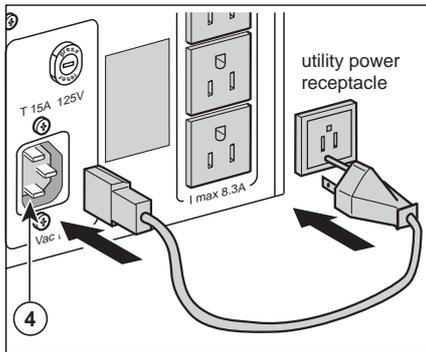
■ connect the computer loads to output sockets ⑦ .

Note 1: following connection, the battery automatically charges, whenever plugged in.

Note 2: the batteries will provide full back-up time after approximatively 8 hours of recharge time.

Note 3: the rating of input power cord must be not less than the nominal input rating of **Pulsar EX:** use the supplied cord.

Note 4: if site wiring fault LED ⑧ is lit and buzzer sounds, line/neutral connections are reversed.

■ **connection of the Pulsar EXB10/EXB15 battery extension module** (optional)**:**
□ check that the button "on/off" " ⏻ " on the front of the **Pulsar EX10/EX15** is not pushed in,
□ disconnect the input connection cord,
□ flip the circuit-breaker of the battery unit to the right (position "O"),
□ connect the battery connection cord to the DC connector of the battery module and connect to the **Pulsar EX10/EX15**,
□ if the installation has 2 battery modules, connect the second cord to the DC connector of the second module and to the first module,
□ the use of connectors is strictly limited to connecting the battery modules to the **Pulsar EX10/EX15**. Any other connection to these connectors is prohibited and risks damaging the battery, not covered by warranty,
□ to start, flip the battery circuit-breaker to the left (position "I"),
□ if your installation is operated with MGE UPS SYSTEMS software, update your battery configuration with EX Tuner.

communication

■ the U-Talk communication port, at the rear of the **Pulsar**, delivers information in the form of an RS232 series link supported by the communication protocol exclusive to MGE UPS SYSTEMS.
The Solution-Pac™ programs use the data made available by this protocol.
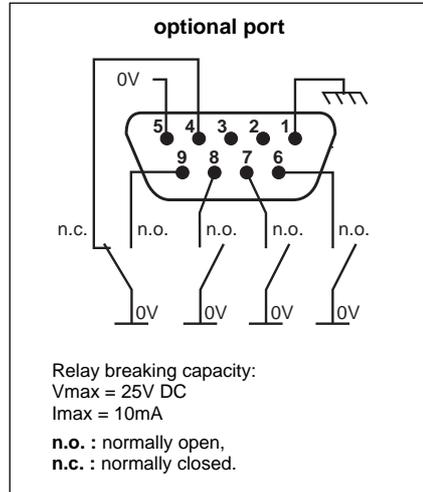

standard port
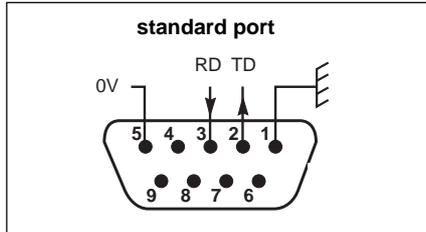
With the EX Driver software program you can set up **Pulsar EX** to suit your user conditions (EX Tuner), supervise your UPS and safeguard your system (UPS Manager 3.1). To install EX Driver, connect the serial cable supplied to COM1 to COM4 (set up by EX Tuner) series port of your computer equipped with Windows 3.1 on the one end, and to the serial **Pulsar EX** connector on the other end. Insert the disk and type A:\Install. Follow the installation instructions on the screen. You may then use 2 software programs :
□ EX Tuner to set up **Pulsar EX**,
□ UPS Manager 3.1 to supervise and safeguard your system.

option 1

■ **status information card:** after the card is installed in the rear of the **Pulsar**, communication port transmits the status information on a SUB-D 9-pin female connector using the following pinouts:

1 - ground,
4 - normal operation,
5 - common,
6 - operation on utility power,
7 - low battery warning,
8 - load supplied by UPS,
9 - operation on battery.

optional port

Relay breaking capacity:
Vmax = 25V DC
Imax = 10mA
n.o. : normally open,
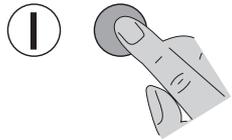**n.c. :** normally closed.

option 2

■ **SNMP card:** after the card is installed in the rear of the **Pulsar**, the communication port transmits information supported by the SNMP protocol on an RJ45 or BNC connector.

Contact your sales agent for further details.

operation

starting up with utility power present

press button "on/off" :

automatic sequence:

0 s	5 s	7 s	17 s
indicator lights test	**device and battery test**	**normal operation**	
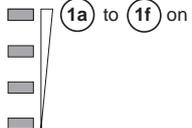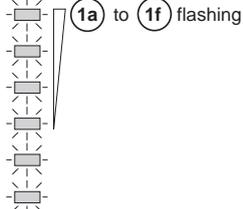
(1a) to (1f) on

(1a) to (1f) flashing

(1a) to (1d) indicating the remaining battery time percentage (here 50%)

(1a) to (1d) indicating the recharge percentage of the battery (here 50%)

(1e) on

(1f) on

(1e) off

(1f) on

1 s beep

several beeps

silence

silence

output off

output off

your load is supported by the battery

UPS is on utility power

starting up with out utility power

press "on/off" button:

automatic sequence:
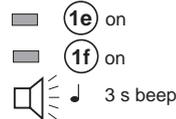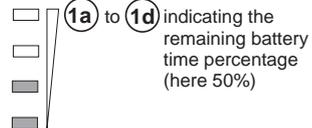
press "on/off" button:	indicator lights test	device and battery test	normal operation on battery
0 s	**5 s**	**7 s**	**17 s**
(1a) to (1f) on	(1a) to (1f) flashing	(1a) to (1d) indicating the remaining battery time percentage (here 50%)	(1a) to (1d) indicating the remaining autonomy percentage (here 50%)
		(1e) on	(1e) flashing
		(1f) on	(1f) on
1 s beep	several beeps	3 s beep	1 beep every 10 s
output off	**output off**	**your load is supported by the battery**	**UPS is on utility power**
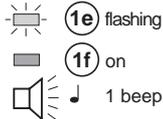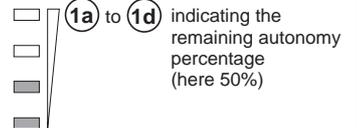
operation on battery
no utility power

break in utility power	warning alarm at low battery	Pulsar switches off automatically	if Pulsar is operating on battery without load: UPS switches off
0 mn	**x mn**	**x + ε mn**	**5 mn**

break in utility power (0 mn)

(1a) to (1d) indicating the remaining battery time: here, between 75 and 87%

(1e) flashing

(1f) on

♪ 1 beep every 10 s

your load is supported by the battery

warning alarm at low battery (x mn)

(1a) to (1c) off

(1d) flashing

(1e) flashing

(1f) on

♪ 1 beep every 3 s

you have less than 12% battery time remaining: power down your load, Pulsar will soon switch off automatically

Pulsar switches off automatically (x + ε mn)

(1a) to (1f) off

silence

UPS output "off"

if Pulsar is operating on battery without load: UPS switches off (5 mn)

(1a) to (1f) off

silence

load off

return of utility power

At whatever point the utility power returns, **Pulsar** switches to normal operation:

(1a) to (1d) indicating the battery recharge percentage: here, between 12 and 25%

(1e) indifferent

(1f) on

silence

your load is supplied by the utility power (on line)
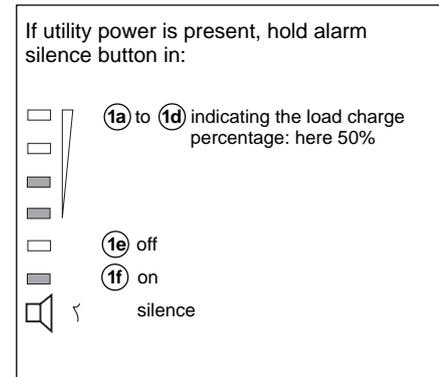
Note:
The alarm silence button is to deactivate or activate the audio warning device when operating on battery, or when site wiring fault occured.

load charge percentage

If utility power is present, hold alarm silence button in:

(1a) to (1d) indicating the load charge percentage: here 50%

(1e) off

(1f) on

silence

overload
utility power present

(1a) flashing

(1d) flashing
(1e) off
(1f) on

1 beep every second

automatic load transfer to bypass

no utility power present

(1a) flashing

(1e) flashing
(1f) on

1 beep every second

Pulsar switches off automatically after a length of time which depends on the level of overload.

Note: overload occurs if the load consumption is greater than the rated power of **Pulsar**.
To acknowledge the fault, release the "on/off" button, temporarily disconnected **Pulsar** from the wall socket (check input cord), disconnect loads and re-start **Pulsar**.

operating anomalies
device fault

(1b) flashing

(1d) flashing
(1e) off
(1f) on

1 beep every second

☐ **automatic load transfer to bypass,**
☐ switch off **Pulsar** (release "on/off" button), disconnect from the wall socket (check input cord), and check that **Pulsar** has not short-circuited (disconnect all loads),
☐ if necessary, change the input fuse,
☐ re-start **Pulsar**.

battery low

(1a) to **(1f)** off

♪ ♪...continuous beep

after the start-up sequence, if the audio warning device sounds continuously, **recharge your battery for 8 hours.**

Note: if the previous symptoms persist, contact technical support.

battery fault

A battery test is carried out while **Pulsar**, is in start-up mode, then automatically every 7 days (interval times adjustable using EX Driver). If a battery fault is detected, the following occurs:

(1c) flashing

(1e) off
(1f) on

1 beep every second

recharge your battery for 8 hours.

operation on bypass

(1a) and **(1b)** indifferents

(1d) flashing
(1e) off
(1f) on

1 beep every second

see "overload" and "device fault" section

Note:
This operating mode provides temporary inverter fault tolerance.